ENSF 338 Lab 3
Group 35
Exercise 3

Q 3.1) Derive the formulas for (i) number of comparisons, and (ii) average-case number of swaps for bubble sort [0.4 pts]

A 3.1) (i) Bubble sort compares 2 adjacent values in a list of size n and checks whether n > n+1 and swaps them if that statement is true, it dies this for (n-1) iterations. The number of comparisons is denoted by the following equation.

$$\frac{[n(n+1)]}{2} \rightarrow O(n^2)$$

A 3.1) (ii) We assume at least half of the list entries are in the wrong order, so the probability of a swap is 50% or ½. The average swaps can be denoted by the following equation.

$$\frac{[n(n+1)]}{4} \rightarrow O(n^2)$$

Q 4) Discuss your results: do they match your complexity analysis?

A 4) As seen in the graph, the complexity of both average case and number of comparisons both increase quadratically as the input size increases which matches the complexity analysis